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Art Group 2185	571/273-8300	571/272-4100

RE: Application No. 10/602,254
In re application of: Travis D. Fox, et al.
Assignee: SEAGATE TECHNOLOGY LLC
Dkt. No.: STL11083

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PATENT
Dkt. STL11083

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: **Travis D. Fox, Edwin S. Olds, Mark A. Gaertner and AbbasAli**
 Assignee: **SEAGATE TECHNOLOGY LLC**
 Application No.: **10/602,254** Group No.: **2185**
 Filed: **June 23, 2003** Examiner: **Hong Chong Kim**
 For: **TRANSFERRING SPECULATIVE DATA IN LIEU OF REQUESTED DATA IN A DATA TRANSFER OPERATION**

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 Commissioner for Patents
 P.O. Box 1450
 Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF
 (PATENT APPLICATION—37 C.F.R. § 41.37)

- Transmitted herewith, is the APPEAL BRIEF in this application, with respect to the Notice of Appeal filed on April 17, 2006 and Notice of Panel Decision from Pre-Appeal Brief Review mailed from the USPTO on August 9, 2006. As indicated in the Notice of Panel Decision “The time period for filing an appeal brief will be reset to be one month from mailing this decision, or the balance of the two-month time period running from the receipt of the notice of appeal, whichever is greater.”

2. STATUS OF APPLICANT

This application is on behalf of other than a small entity.

3. FEE FOR FILING APPEAL BRIEF

Pursuant to 37 C.F.R. § 41.20(b)(2), the fee for filing the Appeal Brief is:

Appeal Brief fee due for other than a small entity	\$500.00
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CERTIFICATION UNDER 37 C.F.R. §§ 1.8(a)

I hereby certify that, on the date shown below, this correspondence is being:

10/11/2006 MBINAS 00000039 10602254

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TRANSMISSION

04-FE-11481

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Diana C Anderson

Signature

Date: October 10, 2006

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Diana C. Anderson

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4. EXTENSION OF TERM

OCT 10 2006

The proceedings herein are for a patent application and the provisions of 37 C.F.R. § 1.136 apply.

Applicant petitions for an extension of time under 37 C.F.R. § 1.136 (fees: 37 C.F.R. § 1.17(a)(1)-(5)) for one month:

Fee: \$120.00

If an additional extension of time is required, please consider this a petition therefor.

5. TOTAL FEE DUE

The total fee due is:

Appeal brief fee	\$500.00
Extension fee (if any)	\$120.00

TOTAL FEE DUE \$620.00

6. FEE PAYMENT

Authorization is hereby made to charge the amount of \$620.00 to Credit card as shown on the attached credit card information authorization form PTO-2038.

7. FEE DEFICIENCY

If any additional extension and/or fee is required, and if any additional fee for claims is required, charge Deposit Account No. 06-0540.

Date: 10/10/06

Respectfully submitted,

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OCT 10 2006 PATENT
Dkt. STL11083

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: **Travis D. Fox, Edwin S. Olds, Mark A. Gaertner and Abbas Ali**
 Assignee: **Seagate Technology LLC**
 Application No.: **10/602,254** Group Art Unit: **2185**
 Filed: **June 23, 2003** Examiner: **H.C. KIM**
 For: **TRANSFERRING SPECULATIVE DATA IN LIEU OF REQUESTED DATA IN A DATA TRANSFER OPERATION**

Mail Stop Appeal Brief - Patents
 Commissioner for Patents
 P. O. Box 1450
 Alexandria, Virginia 22313-1450

ATTENTION: Board of Patent Appeals and Interferences

Sir:

APPELLANT'S BRIEF

This Brief is in furtherance of the Notice of Appeal that was filed in this case on April 17, 2006. The required fees, any required petition for extension of time for filing this Brief, and the authority and time limits established by the Notice of Appeal are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

CERTIFICATION UNDER 37 C.F.R. §§ 1.8(a)

I hereby certify that, on the date shown below, this correspondence is being:

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Diana C Anderson
 Signature

Date: October 10, 2006

Diana C. Anderson
 (type or print name of person certifying)
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This brief contains these items under the following headings, and in the order set forth below:

- I. REAL PARTY IN INTEREST
- II. RELATED APPEALS AND INTERFERENCES
- III. STATUS OF CLAIMS
- IV. STATUS OF AMENDMENTS
- V. SUMMARY OF CLAIMED SUBJECT MATTER
- VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL
- VII. ARGUMENT
- VIII. CLAIMS APPENDIX
- IX. EVIDENCE APPENDIX
- X. RELATED PROCEEDINGS APPENDIX

I. REAL PARTY IN INTEREST

The real party in interest in this Appeal is Seagate Technology LLC.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in this Appeal.

III. STATUS OF CLAIMS

The status of the claims in this application is:

<u>Claim</u>	<u>Status</u>
1. (Previously presented)	Independent.
2. (Previously presented)	Depends from claim 1.
3. (Previously presented)	Depends from claim 1.
4. (Previously presented)	Depends from claim 1.
5. (Previously presented)	Depends from claim 1.
6. (Previously presented)	Depends from claim 1.
7. (Previously presented)	Depends from claim 1.
8. (Previously presented)	Depends from claim 1.
9. (Previously presented)	Depends from claim 1.
10. (Previously presented)	Depends from claim 1.
11. (Previously presented)	Depends from claim 1.
12. (Previously presented)	Depends from claim 1.
13. (Previously presented)	Depends from claim 1.

21. (Previously presented)	Independent.
22. (Previously presented)	Depends from claim 21.
23. (Previously presented)	Depends from claim 21.
24. (Previously presented)	Depends from claim 21.
25. (Previously presented)	Independent.
26. (Previously presented)	Depends from claim 25.
27. (Previously presented)	Depends from claim 25.
28. (Previously presented)	Depends from claim 25.

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A. TOTAL NUMBER OF CLAIMS IN APPLICATION

Claims in the application: 1-13 and 21-28

B. STATUS OF ALL THE CLAIMS

1. Claims canceled: 14-20.
2. Claims withdrawn from consideration but not canceled: None
3. Claims pending: 1-13 and 21-28
4. Claims allowed: None
5. Claims rejected: 1-13 and 21-28
6. Claims objected to: None

C. CLAIMS ON APPEAL

Claims now on appeal: 1-13 and 21-28

IV. STATUS OF AMENDMENTS

Minor post-final amendments were submitted February 15, 2006. These amendments have not been entered.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The embodiments of the present invention as recited by the language of independent claims 1, 21 and 25 are generally directed to a method and apparatus for transferring data.

As discussed beginning at page 3, line 19, and as shown by FIG. 1, an exemplary data storage device 100 is provided with storage media (discs) 110 which are accessed by an array of read/write transducers 114 moved by an actuator 112. Page 3, lines 19-31.

Exemplary control electronics for the device 100 are depicted in FIG. 2. These control electronics include a controller 134 and a cache memory 138. Page 4, lines 11-19. The controller 134 generally operates to manage data access commands received from a host 150 to transfer data between the host 150 and the media 110.

The data access commands preferably include write operations in which data supplied by the host are temporarily provided to the cache 138 for subsequent writing via read/write channel 152 and preamp 128 to the associated media surface, and read operations in which data previously written to the media 110 are decoded via the preamp 128 and channel 152 to be placed into the cache 138 awaiting subsequent transfer to the host 150. Page 4, line 29 to page 5, line 2.

When multiple access operations are pending, the controller 134 preferably maintains the commands in a command queue and generally schedules the execution of these commands in accordance with preferred embodiments, as explained below. See e.g., page 8, lines 8-11. An exemplary command queue in accordance with preferred embodiments is set forth in FIG. 7.

As discussed beginning at page 5, line 25, it may be deemed advantageous to obtain speculative data from the media 110 in conjunction with the execution of various access commands. Generally, speculative data are non-requested data that are selectively moved to the cache 138 in hopes of satisfying a future request for the data. Overall performance of the device 100 can thus be enhanced if the data can be supplied immediately to the host 150

upon request without the need to schedule an access operation with the media 110 to retrieve the data to cache 138. Page 5, line 25 to page 6, line 8.

Two exemplary forms of speculative data are described as read on arrival (ROA) data and read look ahead (RLA) data. Generally, ROA data are data on a given track that fall subsequent to requested data associated with a host command (i.e., the "read host portion"), while RLA data are data on a given track that precede the host data portion. Page 6, lines 1-3.

As discussed beginning at page 6, line 9, under certain circumstances speculative data are preferably obtained instead of proceeding to execute the next access command in the command queue. This can be carried out, for example, when the utility of obtaining the speculative data is adjudged to be greater than the utility of obtaining the second data. Page 6, lines 12-20; page 6, lines 28-32.

To this end, the specification discusses "access time" as an elapsed period of time between the execution of successive data transfer commands. See page 7, lines 3-7. The access time does not form a portion of the executed data transfer commands, but rather is the intervening time therebetween. The access time can include a seek time during which a seek may be carried out to move the transducer to the destination track, a setup time to prepare for the second command, and a latency period during which the system waits for the second data to rotate around and reach the transducer so that the second command can be executed. Page 7, lines 5-7 and lines 13-17.

Preferably, a process referred to as "expanding speculative data" is carried out so that, instead of merely obtaining speculative data in the normal access time available between successively scheduled commands, the time to obtain speculative data is increased so that the

speculative data are obtained in lieu of execution of a second command (e.g., the next best command in the command queue). See page 8, lines 3-11. In this way, the execution of the second command is delayed so that speculative data can be transferred in lieu thereof.

At page 8, lines 23 et seq., the specification explains how that expanding speculative data necessarily results in the skipping of the next best command, so that the speculative data are transferred instead of the second data during a next available latency period for the second command. See page 8, lines 23-30 and page 9, lines 1-7. This may result in the "burning of an extra revolution" while the system waits for the portion of the media associated with the execution of the second command rotates around to the head. Page 9, lines 8-11.

FIG. 3 provides a simplified timing diagram to generally illustrate how that the device 100 may carry out the foregoing inventive process. A detailed explanation of the timing diagram of FIG. 3 is set forth at page 9, line 16 to page 10, line 7.

Generally, in FIG. 3 the controller 138 queues up a number of pending access commands, including a first command (read-E command 154) and a second command (writeback-A command 151). If normal processing is employed so that the second command is not delayed, the device 100 will preferably operate to execute the first read-E command to acquire the requested data at 154, acquire a set of speculative data at 158, seek to the new track (dark arrow in FIG. 3), and then execute the second writeback-A command at 151. The amount of speculative data that can be obtained at block 158 is limited to the amount of time available between the normally scheduled commands 154, 151.

However, if speculative data acquisition is expanded in accordance with preferred embodiments of the present invention, the system 100 will execute the first read-E command

to acquire the requested data at 154, obtain the speculative data at 158, and then continue obtaining the speculative data shown at block 162 instead of obtaining the second data for the second writeback-A command 151.

This necessarily results in a delay in the execution of the second writeback-A command 151 until a later time. However, the transfer of the speculative data 158, 162 to cache 138 in lieu of the second data advantageously allows an immediate cache hit to be made for a subsequently presented read-F command 156.

FIG. 4 sets forth an exemplary routine that can be carried out in accordance with preferred embodiments to perform expanded speculative data transfers as discussed above. See FIG. 4 and page 11, lines 1 *et seq.* Alternative exemplary routines are set forth by FIGS. 5 and 6. See FIG. 5 and page 13, lines 15 *et seq.*; FIG. 6 and page 15, line 15 *et seq.*

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The grounds for rejection presented for review on appeal are as follows:

1. The final rejection of claims 1-13 and 25-28 under 35 U.S.C. §112, first paragraph, for failure to comply with the written description requirement;

2. The final rejection of claims 1-13 and 21-28 under 35 U.S.C. §102(e) as being anticipated by U.S. Published Patent Application No. US2003/0105919 to Olds et al. ("Olds '919"); and

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3. The final rejection of independent claims 1, 21 and 25 under 35 U.S.C. §103(a) as being obvious over U.S. Published Patent Application No. US2002/0052985 to Furuumi et al. ("Furuumi '985") in view of a reference text by Handy entitled "The Cache Memory Book," Academic Press, Inc., 1993, pp. 5-8 and 64-84 (the "Handy Text").

VII. ARGUMENT

A. FIRST GROUNDS – REJECTION OF CLAIMS 1-13 AND 25-28 UNDER 35 U.S.C. §112, FIRST PARAGRAPH FOR FAILURE TO MEET THE WRITTEN DESCRIPTION REQUIREMENT

The final Office Action mailed December 15, 2005 rejected claims 1-13 and 25-28 under 35 U.S.C. §112, first paragraph, on the basis that the claim language "*delaying execution of a second data transfer command to transfer speculative data in lieu thereof*" of independent claims 1 and 25 was not viewed as satisfying the written description requirement.

The Applicant provided detailed arguments in an after-final Response filed February 15, 2006 that the written description requirement was in fact satisfied (Applicant's 2/15/06 Response, pp. 7-10). Nevertheless, the final rejection under §112, first paragraph has been sustained by the Examiner, without clarification or comment. See Advisory Action mailed February 28, 2006; Request for Pre-Appeal Brief Conference filed April 17, 2006; and Panel Decision mailed August 9, 2006.

As the Board will appreciate, the written description requirement of §112, first paragraph is satisfied with regard to a claim amendment if "*one skilled in the art would*

recognize upon reading the specification that the new language reflects what the specification shows has been invented.” All Dental Prodx, LLC v. Advantage Dental Products, Inc., 309 F.3d 774, 779 (Fed. Cir. 2002).

The test is not whether the Examiner can locate the newly added words in the specification as originally filed. Indeed, the Federal Circuit has made it clear that the specification “*need not describe the claimed subject matter in exactly the same terms as used in the claims; it must simply indicate to persons skilled in the art that as of the [filing] date the applicant had invented what is now claimed.*” *Eiselstein v. Frank*, 52 F.3d 1035, 1038 (Fed. Cir. 1995)(emphasis added); See also *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313 (Fed. Cir. 2003).

In the present case, one having skill in the art would readily view the Applicant as having had possession of the newly added claim language as of the time of filing.

Originally presented claim 1 recited in part, “*identifying first and second access commands, and acquiring speculative data in conjunction with an execution of the first access command in lieu of executing the second access command*” (Original claim 1, emphasis added).

In the Applicant’s Response filed October 26, 2005, the foregoing language was generally amended to “*executing a first data transfer command, and then delaying execution of a second data transfer command to transfer speculative data in lieu thereof.*” At the time of this amendment, the Applicant identified support in the written description for the amended language including the original language of claim 1, and in the specification at page 8, lines 18-22, page 9, lines 9-11 and page 17, lines 5-7. (See 10/26/05 Response, p. 9, lines 9-16).

It is noted that both of these sets of claim language generally refer to "first and second commands" and "speculative data." Both of these sets of claim language generally use "in lieu of" type language. Both of these sets of claim language further generally speak in terms of transferring/acquiring the "speculative data" in lieu of executing the "second command."

So at this point it is difficult to see why the Examiner believes this is new matter not supported by the written description as originally filed. However, the Applicant respectfully submits that a skilled artisan would have no trouble understanding that the newly added language is fully supported by the written description.

For example, the specification at page 8 states the following:

"expanding speculative data...necessarily means skipping the next best access command...in the command queue in favor of acquiring additional speculative data." Specification, page 8, lines 18-22 (emphasis added).

The Applicant submits that a skilled artisan would understand that if a command is "skipped," it would necessarily be "delayed" in favor of acquiring additional speculative data, as claimed.

The specification as originally filed further states beginning at page 9, line 2:

"expanding speculative data beyond the latency period of the next queued command necessitates skipping the NBDC [next best disc command], because again, the portion of the data track 120 associated with the NBDC will have rotated beyond the point of alignment for execution of the NBDC, and an additional revolution of the disc 110 will be needed to realign the portion of the data track 120 associated with the NBDC for execution of the NBDC." (Specification, page 9, lines 2-7, emphasis added)

Here, one with skill in the art would readily understand that if speculative data are transferred in this way, the system may be required to wait a full revolution of the disc before the second (NBDC) command can be executed. This is because it would take time for that portion of the disc associated with the second command to rotate around to the head before the second command could be executed. The skilled artisan would clearly view this latency during which the disc undergoes a full revolution as a "delay."

Thus, the Applicant submits that the language "*delaying execution of a second data transfer command to transfer speculative data in lieu thereof*" of independent claims 1 and 25 fully satisfies the written description requirement, and the final rejection under §112, first paragraph is without merit. Reconsideration and withdrawal of the rejection are respectfully requested by the Board.

B. SECOND GROUNDS – REJECTION OF CLAIMS 1-13 AND 21-28 UNDER 35 U.S.C. §102(E)

The Applicant will first address the §102(e) rejection of independent claims 1 and 25 (and the claims depending therefrom) as a first group, followed by the rejection of independent claim 21 (and the claims depending therefrom) as a second group.

1. THE EXAMINER HAS FAILED TO SHOW HOW OLDS '919 DISCLOSES "DELAYING EXECUTION OF A SECOND DATA TRANSFER COMMAND TO TRANSFER SPECULATIVE DATA IN LIEU THEREOF" AS CLAIMED BY CLAIMS 1 AND 25

In order to establish an anticipation rejection, each limitation of the claim must be set forth in the cited reference, either explicitly or via inherency. *In re Bond*, 15 USPQ2d 1566

(Fed. Cir. 1990). Inherency requires a showing that the skilled artisan would understand the missing subject matter to be necessarily present. *Continental Can v. Monsanto*, 20 USPQ2d 1746 (Fed. Cir. 1991).

In sustaining the anticipation rejection, the Examiner has generally argued that (1) initiating a seek as disclosed by Olds '919 can be included as a part of the claimed "execution" of a command, and (2) the drawings in Olds '919 show that a second command can be delayed in different circumstances. The Applicant will consider these in turn.

2. THE EXAMINER CANNOT VIEW THE DELAYS IN INITIATING THE SEEKS IN OLDS '919 AS DELAYS IN THE EXECUTION OF THE SECOND COMMAND

First, the Examiner has argued that the different seeks in FIGS. 4-6 of Olds '919 correspond to differences in timing of the "execution of the second data transfer command," as claimed. See e.g., Final Office Action, p. 4, lines 14-19; Advisory Action, page 2, lines 3-6. This is without merit.

As set forth by the Applicant's 2/15/06 Response beginning at page 10, Olds '919 discloses in FIGS. 4-6 thereof a series of alternative seek paths that can be taken between the execution of a first command for data on a first track (DATA 1, block 150 on track 152) and a second command for data on a second track (DATA 2, block 154 on track 156). Olds '919, paras [0048]-[0059], and FIGS. 4-6.

More specifically, FIG. 4 of Olds '919 generally shows no acquisition of speculative data; FIG. 5 shows speculative data (RLA block 164) is acquired from the first track 152 prior to seeking (block 160) to the second track 156 to obtain the second data 154; and FIG. 6 shows that some speculative data (RLA block 164) is acquired on the first track 152, the

system seeks to the second track (block 160), and then some more speculative data (ROA block 168) are obtained from the second track 156 prior to obtaining the second data 154.

As explained previously to the Examiner, the elapsed time between the first and second commands in each of these alternatives is the same; the only difference is the extent to which speculative data are obtained in that interval. See Olds '919, para [0009], lines 5-11; para [0055], lines 1-4; Applicant's 10/26/05 Response, page 11.

One skilled in the art would not view delays in seeking (such as in FIG. 5 as compared to FIG. 6 of Olds '919) as "*delaying execution of a second data transfer command,*" as claimed. See e.g., Applicant's 10/26/06 Response, pp. 10-11.

The term "execution" in the claim phrase "*execution of a second data access command*" is a term of art and is to be construed in accordance with its ordinary and customary meaning as would be applied by the skilled artisan in view of the written description. *Phillips v. AWH Corporation*, 75 USPQ2d 1321 (Fed. Cir. 2005)(*en banc*); MPEP 2111.01. From the specification, it is readily apparent that "execution" cannot be expanded as the Examiner has provided to cover a preceding seek carried out prior to said execution.

The specification of the present application provides an explicit definition for the term "access time" as follows:

"Access time is an amount of time between completion of an execution of a[n] access command and a subsequent execution of a next scheduled access command. Access time includes a seek time (which includes head settle time), set-up time and a latency period" (Specification, page 7, lines 3-7, emphasis added)

The written description makes a clear distinction between "execution" of a command and the "access time" between the execution of successive commands. The skilled artisan

would clearly view the elapsed time between the execution of successive commands as distinct from, and not forming a portion of, the execution of the commands. This intervening elapsed time, of course, includes any "seek operation" necessary to position the transducer to carry out the second command.

Olds '919 also distinguishes between "execution" of commands and the intervening "access time" therebetween in this same way. See, e.g., Olds '919, para [0055], lines 1-4 ("*The time during which RLA [speculative] data are obtained is preferably determined in relation to the available elapsed time (phase) between the end of the first command and the beginning of the second command*"')(emphasis added). This intervening elapsed time includes any requisite seek operation, so that the seek is NOT viewed as forming a portion of the execution of the subsequent command. See para [0055], lines 4-7; para [0051], lines 4-6.

While the Examiner is entitled to give a broadest reasonable interpretation to claim terms, an interpretation is not reasonable if it is inconsistent with the written description. See *Phillips, Supra; In re Morris*, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997); MPEP 2173.05. In the present case, claims 1 and 25 cannot be construed in such a manner that "execution" includes a preceding seek operation, since such is directly contradictory to the specification, and is contrary to the understanding of the skilled artisan.

3. THE EXAMINER IS IMPROPERLY RELYING UPON THE DRAWINGS OF OLDS '919 TO DISCLOSE A FEATURE NOT SUPPORTED BY THE ASSOCIATED SPECIFICATION

As previously pointed out to the Examiner, Olds '919 makes it clear that in each of the cases of FIGS. 4-6, the same data blocks 150 and 154 are under consideration, and the data from the second data block (DATA 2) 154 are transferred at the same time. See

Accompanying Arguments for Request for Pre-Appeal Brief Request for Review filed April 17, 2006, pp. 3-4; Applicant's 2/15/06 Response, p. 11, lines 1-4.

Nevertheless, the Examiner stated in the Advisory Action that, "*FIGS. 4-6 in Olds reference show different drive operations without any scale on X-axis and also it appears that beginning of DATA 2 transfer time in each operation is not started at the same time.*" 2/28/06 Advisory Action, p. 2, lines 6-7, emphasis added. The Examiner is thus stating that, because the DATA 2 blocks in FIGS. 4-6 do not appear to vertically line up exactly in Olds '919, the language of claims 1 and 25 can be viewed as being satisfied. This is without merit.

It is well settled that assertions based on dimensional measurements of prior art drawings "are of little value" absent corresponding disclosure in the specification that supports such assertions. *In re Wright*, 569, F.2d 1124 (CCPA 1977); see also *Nystrom v. TREX Co.*, 76 USPQ2d 1481 (Fed. Cir. 2005) (reversible error to base a rejection on patent drawings not explicitly made to scale); *Hockerson-Halberstadt Inc. v. Avia Group International Inc.*, 222 F.3d 951 (Fed. Cir. 2000) (patent drawings may not be relied on to disclose particular features if the specification does not support this interpretation).

The Examiner admits that the drawings in Olds '919 are not drawn "to scale," and yet relies on the fact that the leading edge of DATA 2 block 154 in FIG. 5 appears to be a little to the left of the corresponding blocks 154 in FIGS. 4 and 6 in order to assert that the data in FIG. 5 arrive "earlier" in time. This assertion cannot be supported from the record.

It would be apparent to one with skill in the art that the DATA 2 blocks 154 in each of the figures are intended to be the same in each drawing, and any actual misalignments between FIGS. 4-6 are a result of a minor, inadvertent error in the drawings. This is

evidenced by the use of the same reference numerals in each of the drawings for the respective axes (146, 148), data blocks (150, 154), first and second tracks (152, 156), and seek blocks (160).

The specification of Olds '919 states that the purpose of FIGS. 4-6 is to compare and contrast different operational modes of the same disc drive 100. Paras [0029]-[0031] and [0048]. This would readily indicate to the skilled artisan that the drawings provide general representations of different operations that may be taken between the first and second data transfer commands for the same blocks 150, 154, which are clearly intended to be in the same respective locations in each figure. See para [0050], lines 7-8; para [0059].

It will be noted that, after introducing the blocks 150, 154 in the description of FIG. 4, the specification of Olds '919 refers to "the DATA 1 block 150" and "the DATA 2 block 154" in the subsequent descriptions of FIGS. 5 and 6. This would further indicate to a skilled artisan that the same data blocks are under consideration each time. See para [0053], line 3; para [0054], line 4; para [0057], lines 2-3; para [0058], line 7.

If the operation of the RLA mode in FIG. 5 were in fact able to shorten the time required to reach the DATA 2 block 154 as suggested by the Examiner, it seems likely that this advantageous feature would actually be pointed out by the specification of Olds '919. That is, the specification of Olds '919 would not only tout the advantages of obtaining the RLA speculative data in the interval between the first and second commands (in hopes of obtaining a subsequent cache hit), but the specification would also indicate that the RLA operation also allows the DATA 2 block 154 in FIG. 5 to be advanced in time so that the data can be obtained sooner as compared to the DATA 2 block 154 in FIG. 4.

Of course, if this were actually the case, the specification of Olds '919 would also likely indicate that this operational advantage is not available if both RLA and ROA data are obtained, since the DATA 2 block 154 in FIG. 6 goes back to the normal location as previously shown in FIG. 4.

Curiously, unlike the leading edges, the trailing edges of each of the DATA 2 blocks 154 in FIGS. 4-6 do appear to be aligned. Thus, the DATA 2 block 154 in FIG. 5 is actually LONGER than the DATA 2 blocks 154 in FIGS. 4 and 6. This difference in length for the respective blocks 154 is not accounted for by the Examiner; apparently the position taken by the Examiner is that Olds '919 discloses that if RLA is used as in FIG. 5, the transducer reaches the DATA 2 block 154 earlier in time, but it takes longer to carry out the data transfer operation as compared to FIGS. 4 and 6 since each data transfer operation in FIGS. 4-6 ends at the same time. Each of these alternatives, of course, is clearly absurd.

Rather, it should be readily apparent that FIG. 5 includes a small drafting error, so small in fact that the error is not immediately apparent until a straight-edge is applied to the page. But more importantly, there is nothing in the specification that supports the Examiner's interpretation of FIG. 5, and much in the specification that directly contradicts the Examiner's interpretation of FIG. 5.

Since the Examiner is relying upon non-scaled drawings to assert a feature that does not appear in the specification, the anticipation rejection is improper and constitutes reversible error. Reconsideration and withdrawal of the rejection of claims 1 and 25, and for the claims depending therefrom, are accordingly requested.

4. THE EXAMINER HAS FAILED TO SHOW HOW OLDS '919 DISCLOSES THE "TRANSFERRING SPECULATIVE DATA" STEP AS CLAIMED BY CLAIM 21

The foregoing arguments generally apply to independent claim 21 as well, and so these arguments will not be repeated here. Rather, this section will now address further deficiencies in the final anticipation rejection of claim 21, which generally features, "transferring speculative data instead of second data associated with a second pending command during a next available latency period for the second command when the speculative data are adjudged as having a utility greater than a utility of the second data."

(Claim 21, emphasis added)

In the final rejection, the Examiner cited to para [0007] of Olds '919 in support of this language. Final Office Action, page 7, lines 8-15. A review of this section of Olds '919, however, shows that this section merely generally describes latency as an important factor in selecting the next command, which does not appear to be of any particular relevance in view of the actual language of claim 21.

It would appear to be self-evident that the transferring step of claim 21 would be reasonably construed as transferring speculative data instead of second data associated with a second pending command, with such transfer occurring during a next available latency period for the second command.

As discussed above, however, Olds '919 merely discloses to carry out different types of speculative data transfers in the time between the successive execution of commands which otherwise occur at the same point in time. Thus, Olds '919 fails to disclose "transfer speculative data instead of second data associated with a second pending command," as claimed.

Olds '919 further fails to disclose transferring the speculative data instead of the second data "*during a next available latency period for the second command.*" As mentioned above, "latency period" is defined in the specification as forming a part of the "access time" which is between successive commands. See page 7, lines 5-7 and lines 13-17. The specification of the present application at page 9, lines 1-7 clearly indicates that if the speculative data are transferred instead of the next best command, the latency period will have to be expanded by a full revolution of the disc. See also specification, page 9, lines 8-9 ("*In either case, consumption of time beyond the latency period of the access time leads to the burning of an extra revolution...*").

Olds '919 is thus silent with regard to disclosing the recited "*during a next available latency period for the second command*" as set forth by claim 21.

Third, it is noted that Olds '919 is silent with regard to adjudging any utility of speculative data in view of a utility of requested data, much less operating "*when the speculative data are adjudged as having a utility greater than a utility of the second data,*" as claimed.

Accordingly, the anticipation rejection of claim 21 is wholly without merit and constitutes reversible error. Reconsideration and withdrawal of the rejection of claim 21, and for the claims depending therefrom, are respectfully requested.

C. THIRD GROUNDS - REJECTION OF INDEPENDENT CLAIMS 1, 21 and 25
UNDER 35 U.S.C. §103(A)

In order to establish a *prima facie* case of obviousness, all of the limitations of the claim must be taught or suggested by the cited references. See *In re Fine*, 5 USPQ2d 1596

(Fed. Cir. 1988); MPEP 2143.03. In the present case, the Examiner has failed to show how that each of the limitations of each of these claims are taught or suggested by Furuumi '985 and/or the Handy Text. As before, the patentability of claims 1 and 25 will be considered first, followed by consideration of claim 21.

1. OBVIOUSNESS REJECTION OF INDEPENDENT CLAIMS 1 AND 25

The Examiner appears to correctly find that Furuumi '985 fails to teach or suggest speculative data, as claimed by claims 1 and 25. Instead, Furummi '985 teaches an information processing system that employs cache retention and satisfies cache hits from data retained in cache memory as a result of a prior media access request. Furuumi '985, para [0053], lines 12-15; para [0054], lines 1-5; see also Applicant's 2/15/06 Response, p. 12.

But Furuumi '985 is deficient in other ways as well. The Examiner asserted that Furummi '985 teaches "*delaying executing of a second data transfer command (ccw2 block 61 waiting staging completion reports reads on this limitation) to transfer data (target data in block 68 during cache miss) in lieu thereof (block 61 waiting staging completion reports reads on this limitation).*" Final Office Action, page 9, line 23 to page 10, line 3. This is respectfully traversed as an improper characterization of Furummi '985.

As previously pointed out to the Examiner, Furuumi's staging of completion reports has nothing to do with, and cannot be viewed as, teaching or suggesting delaying execution of a second data transfer command to transfer data in lieu thereof, irrespective of whether the data are speculative or not.

Rather, Furuumi '985 teaches to stage commands on a physical drive basis, so that processing of specific command chains (CCWs) may be completed (and subsequently

executed) in an order different than the order in which the CCW chains were submitted for processing. See Furuumi '985, para [0061] ("*the command processing is performed in the order staging completed.*").

The Examiner's reliance upon the processing carried out by Furuumi '985 in the event of a "cache miss" in para [0068] is also misplaced. This section of the reference refers to the flow chart of FIG. 13, and indicates that if a CCW is received and a cache miss occurs (i.e., the data are not already resident in cache), the CCW needs to also be subjected to staging processing, as set forth above. See para [0068], lines 7-12.

There is no indication that CCWs for cache misses referenced in para [0068] would be somehow treated as an exception to the above process set forth in para [0061]. Indeed, it is apparent that every CCW subjected to stage processing in para [0061] is a cache miss (i.e., if it had been a cache hit, no stage processing would have been required).

The above sections thus teach nothing of any significance with regard to the claimed combination, which requires "*delaying execution of a second data transfer command to transfer speculative data in lieu thereof.*" No one with skill in the art would view the above described operation of Furuumi '985 as teaching or suggesting the claimed subject matter except for the speculative data, as asserted by the Examiner.

In the final rejection, the Handy Text was relied upon due to its teachings to "prefetch" anticipated instructions from a memory for use by a processor. See final Office Action, page 10, lines 5-7. However, after the Applicant's 2/15/06 Response, the Examiner added in the Advisory Action that, "Handy discloses delaying executing of a second data transfer command to transfer speculative data in lieu thereof (pp. 6, 72 and 84, spatial locality and reading in additional cache data (prefetching) during cache miss read on this

limitation." Advisory Action, page 2, lines 7-9. Based on this new characterization of Handy, it is not clear why the Examiner did not proceed to give a new §102 rejection of the claims on this basis.

Nevertheless, as previously explained to the Examiner, the references to "spatial locality" by Handy merely relate to the fact that it may be helpful after a cache miss to retrieve the requested word and also retrieve some additional nearby word as well (page 72, lines 21-24). In other cases, automated pre-fetching may take place in the absence of a pending command (page 72, lines 10-16). Other than teaching about times when speculative data may be useful, these teach nothing of any particular significance with regard to the subject matter that is actually claimed.

The Applicant strenuously submits that neither Furuumi '985 or Handy, alone or in combination, provide teachings or suggestions for all of the limitations of the claims, *to wit*, the Examiner has yet to show teachings and suggestions for "delaying execution of a second data transfer command to transfer speculative data in lieu thereof," as claimed. A *prima facie* case of obviousness has thus not been made.

An obviousness rejection is not merely an exercise in which an attempt is made by the Examiner to locate all of the limitations of the claim in two or more references. See *Hartness International, Inc. v. Simplimatic Engineering Co.*, 2 USPQ2d 1826, 1832 (Fed. Cir. 1987) ("the inquiry is not whether each element existed in the prior art, but rather whether the prior art made obvious the invention as a whole for which patentability is claimed").

Rather, obviousness requires a showing by "clear and particular" evidence that the skilled artisan would have been motivated to modify/combine the references to arrive at the

claimed combination. *In re Dembiczaik*, 50 USPQ2d 1614 (Fed. Cir. 1999); MPEP 2143.01.

Mere conclusory statements that the skilled artisan would be so motivated are not "evidence." *In re Fine, Supra*.

In the present case, there is no evidence at all that one having skill in the art would be motivated to arrive at the claimed combination from the teachings and suggestions of the cited references. The Examiner has merely used the claims as a blueprint to cob together mischaracterized and irrelevant teachings of Furuumi '985 and the Handy Text in an attempt to reconstruct the claims using improper hindsight reconstruction. A *prima facie* rejection under §103(a) has thus not been made on this basis as well.

As previously noted by the Applicant, it is curious that the §103(a) rejection is limited to the independent claims, which indicates that the remaining claims are deemed by the Examiner to be patentably distinct over the combination of these references. The Applicant agrees with this assessment with regard to the dependent claims. However, while it is not necessarily improper to reject claims in this fashion, in the present case this further suggests that the obviousness rejection is without merit on the basis that the Examiner has not properly understood or considered the actual teachings or suggestions of the references in rejecting the independent claims.

Reconsideration and allowance of the rejection of independent claims 1 and 25 as being obvious over the above references are therefore respectfully solicited.

2. OBVIOUSNESS REJECTION OF INDEPENDENT CLAIM 21

The above noted deficiencies of Furuumi '985 and the Handy Text are similarly applicable to claim 21, and so will not be repeated here. However, it is noted that

independent claim 21 generally features, "transferring speculative data instead of second data associated with a second pending command during a next available latency period for the second command when the speculative data are adjudged as having a utility greater than a utility of the second data." The Applicant submits that this subject matter is likewise not taught or suggested by the cited references.

In support of the final rejection of claim 21, the Examiner stated in the final rejection that the operation of Furuumi '985 with regard to waiting for the staging completion reports reads on the transfer of data when said data "*are adjudged as having a utility greater than a utility of the second data.*" See Final Office Action, page 10, lines 14-17. There is simply nothing in this section of Furuumi '985, or in Handy, that can be fairly viewed as teaching or suggesting this language. No such discussion of utility occurs at all in either reference, nor would one skilled in the art be motivated to perform the recited data transfer when the utility of the speculative data is deemed to be greater than the utility of the second data as claimed.

Thus, the Examiner has further failed to establish a *prima facie* case of obviousness of claim 21 by failing to set forth teachings and suggestions for all of the limitations of the claim, as well as failing to establish a showing by clear and particular evidence that the skilled artisan would be motivated to arrive at the claimed subject matter by modifying/combining the respective references.

Reconsideration and withdrawal of the rejection of independent claim 21 are accordingly solicited.

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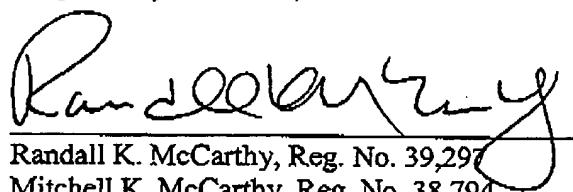
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Conclusion

For the foregoing reasons, it is believed that rejected claims 1-13 and 21-28 stand patentably distinct over the cited references. Reconsideration and passage to issuance of these claims are respectfully requested.

Respectfully submitted,

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VIII. CLAIMS APPENDIX

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1. (Previously presented) A method comprising steps of executing a first data transfer command, and delaying execution of a second data transfer command to transfer speculative data in lieu thereof.
2. (Previously presented) The method of claim 1, wherein the delaying step further comprises a step of adjudging a utility of the speculative data to be higher than a utility of second data associated with execution of said second command.
3. (Previously presented) The method of claim 1, wherein the speculative data are transferred through a next available latency period for the second command.
4. (Previously presented) The method of claim 1, wherein the speculative data are transferred during a time period commencing with conclusion of the execution of the first command and concluding prior to a latency period for execution of a third command.
5. (Previously presented) The method of claim 1, in which the first command precedes and is directly adjacent the second command in an execution sequence.
6. (Previously presented) The method of claim 1, in which the first command precedes and is nonadjacent the second command in an execution sequence.
7. (Previously presented) The method of claim 1, wherein the first command is a data retrieval command.

8. (Previously presented) The method of claim 1, wherein the second command is a data transmission command.

9. (Previously presented) The method of claim 1, wherein the speculative data are acquired in conjunction with first data acquired from execution of the first command.

10. (Previously presented) The method of claim 1, in which resolution of the amount of speculative data transferred during the delaying step is resolved to be a predetermined constant amount of data.

11. (Previously presented) The method of claim 9 1, in which resolution of the amount of speculative data transferred during the delaying step is resolved to be a percentage of a buffer segment of a memory.

12. (Previously presented) The method of claim 1, in which resolution of the amount of speculative data transferred during the delaying step is resolved based on an analysis of previous commands.

13. (Previously presented) The method of claim 1, in which resolution of the amount of speculative data transferred during the delaying step is resolved based on an amount of remaining space within a buffer segment of a memory.

Claims 14-20 (Cancelled).

21. (Previously presented) A method comprising steps of transferring first data in response to an execution of a first pending command, and transferring speculative data instead of second data associated with a second pending command during a next available latency period for the second command when the speculative data are adjudged as having a utility greater than a utility of the second data.

22. (Previously presented) The method of claim 21, further comprising steps of receiving the first and second commands in a queue, and executing a command execution algorithm that identifies the second command as a next best command to be executed after execution of the first command.

23. (Previously presented) The method of claim 21, comprising a subsequent step of transferring the second data in response to execution of the second command after the transferring speculative data step.

24. (Previously presented) The method of claim 21, wherein the second command is a write-back command.

25. (Previously presented) An apparatus comprising a controller configured to execute a first data transfer command, and to delay execution of a second data transfer command to transfer speculative data in lieu thereof.

26. (Previously presented) The apparatus of claim 25, wherein the controller is further configured to adjudge a utility of the speculative data to be higher than a utility of second data associated with execution of said second command.

27. (Previously presented) The apparatus of claim 25, wherein the controller is further configured to subsequently execute the second command to transfer second data after transfer of the speculative data.

28. (Previously presented) The apparatus of claim 25, wherein the controller is characterized as a controller of a data storage device.

IX. EVIDENCE APPENDIX

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No additional evidence is included.

X. RELATED PROCEEDINGS APPENDIX

There exist no relevant related proceedings concerning this Appeal before the Board.